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Toxics in Packaging Overview:

2014–2015, 2015–2016, 2017, and 2018–2019 Results

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[1] https://apps.ecology.wa.gov/consumerproducts/

Toxics in Packaging Overview

2014–2015, 2015–2016, 2017, and 2018–2019 Results

by

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Abstract

Washington State's Packages Containing Metals and Toxic Chemicals law (70A.222 RCW) restricts the amount of metals in packaging sold in Washington State. The law limits the concentration levels of cadmium, hexavalent chromium, lead, and mercury to less than or equal to 100 parts per million (ppm).

The Washington State Department of Ecology (Ecology) conducted four studies (2014–2015, 2015–2016, 2017, and 2018–2019) to assess the levels of lead, cadmium, chromium, and mercury in packaging components. Throughout the four studies, 122 samples were tested. Data collected from 2014 to 2019 is summarized in this report.

Introduction

In 1991, Washington State passed the Packages Containing Metals and Toxic Chemicals law (70A.222 RCW). Effective in 1995, this law limits concentrations of lead, cadmium, hexavalent chromium, and mercury in any package or packaging component to less than or equal to the sum of 100 ppm. The restrictions were enacted for the following reasons:

> (1) The management of solid waste can pose a wide range of hazards to public health and safety and to the environment.
>
> (2) Packaging comprises a significant percentage of the overall solid waste stream.
>
> (3) The presence of heavy metals in packaging is a part of the total concern in light of their likely presence in emissions or ash when packaging is incinerated or in leachate when packaging is landfilled.
>
> (4) Lead, mercury, cadmium, and hexavalent chromium, on the basis of available scientific and medical evidence, are of particular concern.
>
> (5) The intent of this chapter is to achieve a reduction in toxicity without impeding or discouraging the expanded use of post-consumer materials in the production of packaging and its components. (RCW 70A.222.005).

Cadmium, hexavalent chromium, lead, and mercury are known to be toxic and can adversely affect human health. Exposure to these metals may result in a range of health complications, including brain and nervous system damage, hypertension, kidney damage, lung damage, fragile bones or bone loss, gastrointestinal irritation or vomiting, and cancer (Ecology 2024a, 2024b).

Lead is known to be developmentally toxic and hazardous to children. It can cause nerve damage, reduced IQ in children, anemia, renal impairment, and hypertension(EPA 2004, 2012). There is no known safe level of lead. Exposure to cadmium can result in health impacts such as cancer (cadmium is a known carcinogen), kidney damage, lung damage, fragile bones or bone loss, gastrointestinal irritation, and vomiting (Huang et al. 2019). All hexavalent chromium compounds are considered carcinogenic to workers. The risk of developing lung, nasal, and sinus cancer increases with the amount of hexavalent chromium inhaled and the duration of exposure (OSHA 2024). Mercury is toxic in all forms and affects the brain and nervous system, causing kidney and liver damage, and is linked to cancer (EPA 1997)

Washington State is a member of The Toxics in Packaging Clearinghouse (TPCH). This organization maintains the Model Toxics in Packaging Legislation,[2] which recommends restricting the chemicals described above. To promote consistency across states, TPCH coordinates the implementation of legislation in member states based on the Model. In 2017, TPCH conducted a study of packaging from member states. Ecology and other agencies contributed data to this study, some of which are summarized here. This report is intended to fully report the results sent for that report and later results from the project.

In recent years, the Washington State Department of Ecology (Ecology) conducted four studies (2014–2015, 2015–2016, 2017, and 2018–2019) to assess the levels of total lead, cadmium, chromium,[3] and mercury in packaging components. These studies followed the published Quality Assurance Project Plan (QAPP; van Bergen 2015) and evaluated packaging components as defined in the QAPP.

[2] https://toxicsinpackaging.org/model-legislation/model/

[3] Total chromium was analyzed in this study. This analysis captures individual chromium species, including hexavalent chromium and trivalent chromium, and is reported as total chromium. Data for total chromium that meets the regulatory level (≤ 100 ppm) signifies that the hexavalent chromium is also ≤ 100 ppm. Results for total chromium > 100 ppm are inconclusive for determining compliance to the hexavalent chromium criteria. For that determination, further testing by a speciation method for hexavalent chromium would be required.

Methods

Sample Collection and Processing

Between 2014 and 2019, packaging was collected from products that were donated to Ecology, sourced from previous Ecology studies, or purchased new. These packaging samples consisted of plastics, metals, fabric, and biobased materials like cardboard. Products were not selected to be representative of any product category or industry. No glass packaging (e.g., glass bottles) was tested for this study.

Packaging components purchased by Ecology staff were received and processed following the study QAPP (van Bergen 2015), Product Sampling Procedure (Ecology 2014), Standard Operating Procedure (SOP) PTP001 v1.0 (for 2016 and 2017 data; Ecology 2016a), SOP PTP001 v2.0 (for 2018 and 2019 data; Ecology 2018a), SOP PTP002 v1.0 (Ecology 2016b), SOP PTP002 v1.0 (Ecology 2017a), and SOP PTP002 v2.0 (Ecology 2019). While purchasing and handling details of donated products are unknown, products were handled following Ecology SOPs after acquisition. Products from other states are labeled with that state's abbreviation, and products donated or repurposed are labeled with product number 00.

Components were screened for metals following SOP PTP003 v1.0 (Ecology 2017b), and SOP PTP003 v1.1 (Ecology 2018b). X-ray Fluorescence (XRF) screening was used to identify components for further lab analysis. Components chosen for lab analysis were then reduced in size and sent to Manchester Environmental Laboratory (MEL) for analysis by EPA method 6020 (EPA 2014). Forty-four samples did not have purchase records and were donated or reused. Laboratory data were qualified in this report and rejected by project managers (PMs) for entry in the database due to a lack of purchase date or chain of custody documentation. Database entry requires a purchase date. Previous scientists entered data from donated or repurposed products into the database using different procedures at different times. The full laboratory report is available from the PM upon request.

Figure 1 Example of Clear Plastic Packaging Bag

Laboratory Analysis and Data Quality

Analysis for cadmium, chromium, lead, and mercury in packaging was performed by MEL following the quality assurance (QA) system in place when samples were submitted.

A total of 122 packaging component samples were submitted to MEL for analysis. The study QAPP specified an analysis of all analytes using the EPA method 6020A (van Bergen 2015). MEL was accredited for EPA 6020A until the 2018–2019 study and to the newly promulgated 6020B for the 2018–2019 study. Packaging samples were tested using the accredited method at the time of sample submission. The method updates added enhanced quality control (QC) measures.

Table 1. Laboratory procedures and method reporting limits used.

Parameter	Number of Samples	Matrix	Prep Method	Analysis Method	Method Reporting Limit (MRL)
Cadmium, Chromium Lead,	122	Plastic/metal /biobased	EPA 3052	EPA 6020A/B	1 ppm
Mercury	39	Plastic/metal /biobased	EPA 3052	EPA 6020A/B	0.02 ppm

All samples were sent to MEL under chain of custody, except for the samples from other states listed in Appendix A, Table A5. For those packaging samples, it was not possible to claim that full chain of custody was maintained from the point of purchase, as documentation was not available for review. Data from components starting with 00 and from other states is not suitable for regulatory use and should be viewed as examples to prioritize in future studies.

No separate validation was requested under the QAPP.

In the 2014 – 2015 data, one client sample component (BB-3-4-8) had a matrix spike (MS), and matrix spike duplicate (MSD) with the recovery for lead outside the acceptance limits. The spiking concentrations were insufficient for the elevated sample concentration, and no qualification was needed.

One matrix spike in 2015 – 2016 showed high recovery outside of acceptance limits for chromium. A qualifier was not needed because it was associated with only non-detect (1 U) results.

One 2017 sample report had a high relative percent difference (RPD)and matrix spike/matrix spike duplicate (MS/MSD) recovery for chromium, due to high source sample concentration. One 2017 sample batch had high MS/MSD recoveries due to the source sample having a higher concentration than the spiking solution.

No QC samples exceeded the acceptance limits for 2018 – 2019 study data.

Results

As stated in the Methods section, samples donated without purchasing information were rejected for inclusion into the database due to data entry requiring a purchase number and date. It is impossible to fully verify data accuracy without full sample integrity documentation. Sample results are included here for data transparency and completeness.

2014 – 2015

Thirty-seven packaging components were analyzed for cadmium, chromium, lead, and mercury, producing a total of 148 test results. All test results were validated and reviewed, and all Ecology-purchased packaging data were entered following the Product Sampling Procedure (Ecology 2014).

Twenty-eight out of 37 results for cadmium were above the project reporting limit of 1 ppm. Results ranged from <1 ppm to 1,220 ppm (Table 2).

Fifteen out of 37 results for chromium were above the project reporting limit of 1 ppm. Results ranged from <1 ppm to 230 ppm (Table 2).

Twelve out of 37 results for lead were above the project reporting limit of 1 ppm. Results ranged from <1 ppm to 1,180 ppm (Table 2).

No results for mercury were above the project reporting limit of 1 ppm. Results ranged from 0.017 ppm to 0.02 ppm (Table 2).

Table 2. Summary statistics for packaging components analyzed for cadmium, chromium, lead, and mercury in the 2014 – 2015 Toxics in Packaging study.

Analyte	Cadmium	Chromium	Lead	Mercury
Number of Samples (N)	37	37	37	37
N > Project Reporting Limit (1 ppm)	28	15	12	0
Maximum (ppm)	1,220	230	1,180	0.02
Minimum (ppm)	1	1	1	0.017

2015 – 2016

Four packaging components were analyzed for cadmium, chromium, lead, and mercury, producing a total of 14 test results. All test results were validated and reviewed, and Ecology-purchased packaging data were entered into the database following the Product Sampling Procedure (Ecology 2014), and SOP PTP002 v1.0 (Ecology, 2016b).

Four out of four results for cadmium were above the project reporting limit of 1 ppm. Results for chromium ranged from 323 – 839 ppm (Table 3).

No results for chromium were above the project reporting limit of 1 ppm. All four results were <1 ppm (Table 3).

No results for lead were above the project reporting limit of 1 ppm. All four results were <1 ppm (Table 3).

No results for mercury were above the project reporting limit of 11 ppm. Results ranged from 0.019 to 0.02 ppm (Table 3).

Table 3. Summary statistics for packaging components analyzed for cadmium, chromium, lead, and mercury in the 2015 – 2016 Toxics in Packaging study.

Analyte	Cadmium	Chromium	Lead	Mercury
Number of Samples (N)	4	4	4	2
N > Project Reporting Limit (1 ppm Cd, Cr, Pb; 11 ppm Hg)	4	0	0	0
Maximum (ppm)	839	1	1	0.02
Minimum (ppm)	323	1	1	0.019

2017

Forty-seven packaging components were analyzed for cadmium, chromium, and lead, producing a total of 141 test results. All test results were validated and reviewed, and Ecology-purchased packaging data were entered into the database following SOP PTP002 v1.0 (Ecology 2017a).

Thirty-two out of 47 results for cadmium were above the project reporting limit of 1 ppm. Results ranged from <1 ppm to 974 ppm (Table 4).

Twenty-one out of 47 results for chromium were above the project reporting limit of 1 ppm. Results ranged from <1 ppm to 483 ppm (Table 4).

Eighteen out of 47 results for lead were above the project reporting limit of 1 ppm. Results ranged from <1 ppm to 1,480 ppm (Table 4).

Table 4. Summary statistics for packaging components analyzed for cadmium, chromium, and lead in the 2017 Toxics in Packaging study.

Analyte	Cadmium	Chromium	Lead
Number of Samples (N)	47	47	47
N > Project Reporting Limit (1 ppm)	32	21	18
Maximum (ppm)	974	483	1,480
Minimum (ppm)	1	1	1

2018 – 2019

Thirty-four packaging components were analyzed for cadmium, chromium, and lead, producing a total of 102 results. All test results were validated and reviewed, and Ecology-purchased packaging data were entered into the database following SOP PTP002 v.10 (Ecology 2017a), and SOP PTP002 v2.0 (Ecology 2019).

Twenty-nine out of 34 results for cadmium were above the project reporting limit of 1 ppm. Results ranged from <1 ppm to 1,020 ppm (Table 5).

Twenty-seven out of 34 results for chromium were above the project reporting limit of 1 ppm. Results ranged from <1 ppm to 78 ppm (Table 5).

Fourteen out of 34 packaging component results for lead were above the project reporting limit of 1 ppm. Results ranged from <1 ppm to 2,010 ppm (Table 5).

Table 5. Summary statistics for packaging components analyzed for cadmium, chromium, and lead in the 2018 – 2019 Toxics in Packaging study.

Analyte	Cadmium	Chromium	Lead
Number of Samples (N)	34	34	34
N > Project Reporting Limit (1 ppm)	29	27	14
Maximum (ppm)	1,020	78	2,010
Minimum (ppm)	1	1	1

Other States

Results from other states are included in Appendix A (Table A5) yearly results tables and summary statistics calculations. As previously stated, results are not included in the database as purchasing documentation was not available for all samples, though lab reports are available upon request. Packaging purchased in other states is not subject to Washington State laws and does not necessarily reflect products for sale in Washington. Other state data should be used as examples but should not be used for any regulatory purposes.

Discussion

This project was a retrospective clearing out of past data. Data has been transferred by Ecology staff members as appropriate. Due to the length of time between the data collection and the report, data will only be suitable for limited uses.

Statistics

A total of 122 samples were tested across all studies. The data are not representative of all product packaging available on the market in any given year. The total number of detections is displayed below.

Table 6. Summary of detections.

Year	Analyte	Max (ppm)	Median (ppm)	Mean (ppm)
2014–2015	Cadmium	1,220	338	309
2014–2015	Chromium	230	1	18
2014–2015	Lead	1,180	1	142
2014–2015	Mercury	0.02	0.019	0.019
2015–2016	Cadmium	839	558	570
2015–2016	Chromium	1	1	1
2015–2016	Lead	1	1	1
2015–2016	Mercury	0.02	0.02	0.02
2017	Cadmium	974	245	241
2017	Chromium	483	1	23
2017	Lead	1,480	1	49

Year	Analyte	Max (ppm)	Median (ppm)	Mean (ppm)
2018–2019	Cadmium	1,020	351	342
2018–2019	Chromium	78	5	7.8
2018–2019	Lead	2,010	1	127

The 2014 – 2015 data showed 23 cadmium, 5 lead, and 4 chromium samples over the 100 ppm threshold. The 2015 – 2016 data showed 4 samples over the 100 ppm threshold. The 2017 data showed 27 cadmium, 3 chromium, and 3 lead samples over the 100 ppm threshold. The 2018 – 2019 data showed 22 cadmium samples and 2 lead samples over the 100 ppm threshold. The 100 ppm threshold is set by the state of Washington and does not apply to other states. Not all samples were purchased in Washington.

XRF results are screening data. Ecology QA policies do not allow reporting on screening data. Screening data are not validated nor saved in Ecology databases. Item 2 of the Report section of the QAPP (van Bergen, 2015) is not possible.

Comparison by Materials

A goal for the QAPP was to compare different material types. Table 7 displays detections over 1 ppm limit by packaging type. The largest number of samples and detections were from plastic packaging. Bio-based materials had the second highest number of detections, followed by metals. However, the distribution was not necessarily designed to be representative of the total packaging available.

Table 7. Results by year sorted by component materials.

Year	Sum of N > 1 ppm
2014–2015	**36**
Metals (Including alloys)	6
Synthetic Polymers—Plastic	30
2015-2016	**4**
Synthetic Polymers—Plastic	4
2017	**71**
Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	19
Metals (Including alloys)	8
Synthetic Polymers—Plastic	39
Textiles (synthetic fibers and blends)	5
2018–2019	**48**
Synthetic Polymers—Plastic	48
Grand Total	**159**

Note. Component material type was not collected for out-of-state samples.

Other State Sample Comparison — Toxics in Packaging Clearinghouse

Minnesota, New Hampshire, New York, Iowa, and Rhode Island are all members of the Toxics in Packaging Clearinghouse (TPCH) and have regulations based on model legislation from this organization. This model suggests restrictions at 100 ppm. Some data from the 2014 – 2015 study were aggregated by TPCH in their 2017 report (TCPH 2017). Not all data in the report originated from Ecology, and not all Ecology samples were discussed in the report.

Only the 2014 – 2015 and 2018 – 2019 Ecology studies had samples donated from other states. Table 8 presents detections > 1 ppm for Washington State (Ecology) samples, while Table 9 displays detections > 1 ppm for samples donated from other states. The larger number of detections is influenced by the greater number of samples from Washington State. A comparison of detections exceeding the 100 ppm Washington State limit is included; however, other states do not necessarily have the same regulations.

Table 8. Washington State data.

Study Year	Analyte	Number of Detections >100 ppm
2014–2015	Cadmium	11
2014–2015	Chromium	3
2014–2015	Lead	5
2014–2015	Mercury	0
2015–2016	Cadmium	4
2015–2016	Chromium	0
2015–2016	Lead	0
2015–2016	Mercury	0
2017	Cadmium	28
2017	Chromium	3
2017	Lead	3
2018–2019	Cadmium	19
2018–2019	Chromium	0
2018–2019	Lead	2

Table 9. Other state data.

Study Year	Analyte	State(s)	Detections > 100 ppm
2014–2015	Cadmium	MN, NH, NJ	12
2014–2015	Chromium	NH	1
2014–2015	Lead	—	0
2014–2015	Mercury	—	0
2018–2019	Cadmium	MN, NH, RI	3
2018–2019	Chromium	—	0
2018–2019	Lead	NY, RI	3

MN = Minnesota; New Hampshire; NJ = New Jersey; NY = New York; RI = Rhode Island.

Conclusions

This study is a retrospective report of previously collected data sets. Individual data sets were transferred as appropriate. No further conclusions were drawn due to data limitations.

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Glossary, Acronyms, and Abbreviations

Glossary

Acronyms and Abbreviations

Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
MEL	Manchester Environmental Laboratory
MS	Matrix Spike
MSD	Matrix Spike Duplicate
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCW	Revised Code of Washington
RPD	Relative Percent Difference
SOP	Standard Operating Procedures
TPCH	Toxics in Packaging Clearinghouse
WAC	Washington Administrative Code

Units of Measurement

g	gram, a unit of mass
kg	kilograms, a unit of mass equal to 1,000 grams
mg	milligram
mg/kg	milligrams per kilogram (parts per million)
µg/g	micrograms per gram (parts per million)

Appendices

Appendix A. Summary of Results

Table A1. Summary of components analyzed in the 2014 – 2015 study.

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
00-5-27-2*	Synthetic Polymers—Plastic	Cadmium	1	UJ
00-5-27-2*	Synthetic Polymers—Plastic	Chromium	1	UJ
00-5-27-2*	Synthetic Polymers—Plastic	Lead	2.2	J
00-5-27-2*	Synthetic Polymers—Plastic	Mercury	0.019	UJ
00-5-32-1*	Synthetic Polymers—Plastic	Cadmium	1	UJ
00-5-32-1*	Synthetic Polymers-Plastic	Chromium	222	J
00-5-32-1*	Synthetic Polymers—Plastic	Lead	1,180	J
00-5-32-1*	Synthetic Polymers—Plastic	Mercury	0.02	UJ
00-5-33-1*	Synthetic Polymers—Plastic	Cadmium	1	UJ
00-5-33-1*	Synthetic Polymers—Plastic	Chromium	1.12	UJ
00-5-33-1*	Synthetic Polymers–Plastic	Lead	1.89	J
00-5-33-1*	Synthetic Polymers—Plastic	Mercury	0.019	UJ
00-5-34-1*	Synthetic Polymers—Plastic	Cadmium	1	UJ
00-5-34-1*	Synthetic Polymers—Plastic	Chromium	216	J
00-5-34-1*	Synthetic Polymers—Plastic	Lead	1,160	J
00-5-34-1*	Synthetic Polymers—Plastic	Mercury	0.018	UJ
00-5-38-1*	Synthetic Polymers—Plastic	Cadmium	1	UJ
00-5-38-1*	Synthetic Polymers—Plastic	Chromium	1	UJ
00-5-38-1*	Synthetic Polymers—Plastic	Lead	1.98	J
00-5-38-1*	Synthetic Polymers—Plastic	Mercury	0.02	UJ
00-5-43-1*	Synthetic Polymers—Plastic	Cadmium	1,220	J
00-5-43-1*	Synthetic Polymers—Plastic	Chromium	1	UJ
00-5-43-1*	Synthetic Polymers—Plastic	Lead	8.7	J

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
00-5-43-1*	Synthetic Polymers—Plastic	Mercury	0.018	UJ
00-5-64-1*	Synthetic Polymers—Plastic	Cadmium	1.49	J
00-5-64-1*	Synthetic Polymers—Plastic	Chromium	1.32	J
00-5-64-1*	Synthetic Polymers—Plastic	Lead	1.92	J
00-5-64-1*	Synthetic Polymers—Plastic	Mercury	0.02	J
00-5-65-1*	Synthetic Polymers—Plastic	Cadmium	1	UJ
00-5-65-1*	Synthetic Polymers—Plastic	Chromium	1	UJ
00-5-65-1*	Synthetic Polymers—Plastic	Lead	2.32	J
00-5-65-1*	Synthetic Polymers—Plastic	Mercury	0.018	UJ
00-5-66-1*	Synthetic Polymers—Plastic	Cadmium	1	UJ
00-5-66-1*	Synthetic Polymers—Plastic	Chromium	203	J
00-5-66-1*	Synthetic Polymers—Plastic	Lead	1,090	J
00-5-66-1*	Synthetic Polymers—Plastic	Mercury	0.018	UJ
BB-3-2-1	Synthetic Polymers—Plastic	Cadmium	399	—
BB-3-2-1	Synthetic Polymers—Plastic	Chromium	1.33	—
BB-3-2-1	Synthetic Polymers—Plastic	Lead	1	U
BB-3-2-1	Synthetic Polymers—Plastic	Mercury	0.019	U
BB-3-3-1	Synthetic Polymers—Plastic	Cadmium	279	—
BB-3-3-1	Synthetic Polymers—Plastic	Chromium	1	U
BB-3-3-1	Synthetic Polymers—Plastic	Lead	1	—
BB-3-3-1	Synthetic Polymers—Plastic	Mercury	0.018	U
BB-3-4-8	Synthetic Polymers—Plastic	Cadmium	889	—
BB-3-4-8	Synthetic Polymers—Plastic	Chromium	1	U
BB-3-4-8	Synthetic Polymers—Plastic	Lead	1	U
BB-3-4-8	Synthetic Polymers—Plastic	Mercury	0.02	U
BF-1-4-1	Synthetic Polymers—Plastic	Cadmium	413	—
BF-1-4-1	Synthetic Polymers—Plastic	Chromium	1	U

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
BF-1-4-1	Synthetic Polymers—Plastic	Lead	1	U
BF-1-4-1	Synthetic Polymers—Plastic	Mercury	0.019	U
CA-2-5-1	Synthetic Polymers—Plastic	Cadmium	499	—
CA-2-5-1	Synthetic Polymers—Plastic	Chromium	1	U
CA-2-5-1	Synthetic Polymers—Plastic	Lead	1	U
CA-2-5-1	Synthetic Polymers—Plastic	Mercury	0.019	U
FM-12-2-1	Synthetic Polymers—Plastic	Cadmium	729	—
FM-12-2-1	Synthetic Polymers—Plastic	Chromium	1.06	—
FM-12-2-1	Synthetic Polymers—Plastic	Lead	1	U
FM-12-2-1	Synthetic Polymers—Plastic	Mercury	0.02	U
FM-12-4-1	Synthetic Polymers—Plastic	Cadmium	123	—
FM-12-4-1	Synthetic Polymers—Plastic	Chromium	1.06	—
FM-12-4-1	Synthetic Polymers—Plastic	Lead	1	U
FM-12-4-1	Synthetic Polymers—Plastic	Mercury	0.02	U
JS-1-10-2	Synthetic Polymers—Plastic	Cadmium	1	U
JS-1-10-2	Synthetic Polymers—Plastic	Chromium	1	U
JS-1-10-2	Synthetic Polymers—Plastic	Lead	1	U
JS-1-10-2	Synthetic Polymers—Plastic	Mercury	0.019	U
MH-1-3-1	Synthetic Polymers—Plastic	Cadmium	361	—
MH-1-3-1	Synthetic Polymers—Plastic	Chromium	1	U
MH-1-3-1	Synthetic Polymers—Plastic	Lead	1	U
MH-1-3-1	Synthetic Polymers—Plastic	Mercury	0.018	U
MH-1-5-1	Synthetic Polymers—Plastic	Cadmium	416	—
MH-1-5-1	Synthetic Polymers—Plastic	Chromium	1	U
MH-1-5-1	Synthetic Polymers—Plastic	Lead	1	U
MH-1-5-1	Synthetic Polymers—Plastic	Mercury	0.019	U
PS-1-3-1	Synthetic Polymers—Plastic	Cadmium	451	—

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
PS-1-3-1	Synthetic Polymers—Plastic	Chromium	1.76	—
PS-1-3-1	Synthetic Polymers—Plastic	Lead	1	U
PS-1-3-1	Synthetic Polymers—Plastic	Mercury	0.019	U
SA-1-1-1	Synthetic Polymers—Plastic	Cadmium	1	U
SA-1-1-1	Synthetic Polymers—Plastic	Chromium	1	U
SA-1-1-1	Synthetic Polymers—Plastic	Lead	1	U
SA-1-1-1	Synthetic Polymers—Plastic	Mercury	0.02	U
TG-14-12-7	Metals (Including alloys)	Cadmium	5.19	—
TG-14-12-7	Metals (Including alloys)	Chromium	2.72	—
TG-14-12-7	Metals (Including alloys)	Lead	1,010	—
TG-14-12-7	Metals (Including alloys)	Mercury	0.018	U
TG-14-12-8	Metals (Including alloys)	Cadmium	2.22	—
TG-14-12-8	Metals (Including alloys)	Chromium	1.27	—
TG-14-12-8	Metals (Including alloys)	Lead	752	—
TG-14-12-8	Metals (Including alloys)	Mercury	0.018	U

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Table A2. Summary of components analyzed in the 2015-2016 study.

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
00-8-17-1*	Synthetic Polymers—Plastic	Cadmium	708	J
00-8-17-1*	Synthetic Polymers—Plastic	Chromium	1	UJ
00-8-17-1*	Synthetic Polymers—Plastic	Lead	1	UJ
00-8-17-1*	Synthetic Polymers—Plastic	Mercury	0.019	UJ
00-8-47-1*	Synthetic Polymers—Plastic	Cadmium	408	J
00-8-47-1*	Synthetic Polymers—Plastic	Chromium	1	UJ
00-8-47-1*	Synthetic Polymers—Plastic	Lead	1	UJ
00-8-50-1*	Synthetic Polymers—Plastic	Cadmium	323	J
00-8-50-1*	Synthetic Polymers—Plastic	Chromium	1	UJ
00-8-50-1*	Synthetic Polymers—Plastic	Lead	1	UJ
WM-25-1-2	Synthetic Polymers—Plastic	Cadmium	839	
WM-25-1-2	Synthetic Polymers—Plastic	Chromium	1	U
WM-25-1-2	Synthetic Polymers—Plastic	Lead	1	U
WM-25-1-2	Synthetic Polymers—Plastic	Mercury	0.02	U

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Table A3. Summary of components analyzed in the 2017 study.

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
00-11-1-1*	Synthetic Polymers—Plastic	Cadmium	445	J
00-11-1-1*	Synthetic Polymers—Plastic	Chromium	1	UJ
00-11-1-1*	Synthetic Polymers—Plastic	Lead	1	UJ
00-11-23-1*	Synthetic Polymers—Plastic	Cadmium	470	J
00-11-23-1*	Synthetic Polymers—Plastic	Chromium	1	UJ
00-11-23-1*	Synthetic Polymers—Plastic	Lead	1	UJ
00-11-7-1*	Synthetic Polymers—Plastic	Cadmium	347	J
00-11-7-1*	Synthetic Polymers—Plastic	Chromium	1	UJ
00-11-7-1*	Synthetic Polymers—Plastic	Lead	1	UJ
00-8-63-1*	Synthetic Polymers—Plastic	Cadmium	381	J
00-8-63-1*	Synthetic Polymers—Plastic	Chromium	1	UJ
00-8-63-1*	Synthetic Polymers—Plastic	Lead	1	UJ
00-8-66-1*	Synthetic Polymers—Plastic	Cadmium	974	J
00-8-66-1*	Synthetic Polymers—Plastic	Chromium	1	UJ
00-8-66-1*	Synthetic Polymers—Plastic	Lead	1	UJ

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
AM-15-1-1	Synthetic Polymers—Plastic	Cadmium	383	—
AM-15-1-1	Synthetic Polymers—Plastic	Chromium	1	U
AM-15-1-1	Synthetic Polymers—Plastic	Lead	1.54	—
AM-15-2-1	Synthetic Polymers—Plastic	Cadmium	328	—
AM-15-2-1	Synthetic Polymers—Plastic	Chromium	1	U
AM-15-2-1	Synthetic Polymers—Plastic	Lead	1	U
AM-15-3-3	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Cadmium	1	U
AM-15-3-3	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Chromium	6.81	—
AM-15-3-3	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Lead	9.26	—
AM-15-3-7	Textiles (synthetic fibers and blends)	Cadmium	618	—
AM-15-3-7	Textiles (synthetic fibers and blends)	Chromium	1.02	—
AM-15-3-7	Textiles (synthetic fibers and blends)	Lead	4.14	—
AM-15-5-1	Synthetic Polymers—Plastic	Cadmium	1	U
AM-15-5-1	Synthetic Polymers—Plastic	Chromium	1.02	

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
AM-15-5-1	Synthetic Polymers—Plastic	Lead	1	U
BB-8-12-1	Synthetic Polymers—Plastic	Cadmium	282	—
BB-8-12-1	Synthetic Polymers—Plastic	Chromium	1	U
BB-8-12-1	Synthetic Polymers—Plastic	Lead	1	U
BB-8-1-3	Metals (Including alloys)	Cadmium	3.75	—
BB-8-1-3	Metals (Including alloys)	Chromium	1.96	—
BB-8-1-3	Metals (Including alloys)	Lead	26.7	—
BB-8-15-1	Synthetic Polymers—Plastic	Cadmium	339	—
BB-8-15-1	Synthetic Polymers—Plastic	Chromium	1	U
BB-8-15-1	Synthetic Polymers—Plastic	Lead	1	U
BB-8-1-6	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Cadmium	1	U
BB-8-1-6	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Chromium	8.25	—
BB-8-1-6	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Lead	9.15	—
BB-8-2-1	Synthetic Polymers—Plastic	Cadmium	470	—
BB-8-2-1	Synthetic Polymers—Plastic	Chromium	1	U
BB-8-2-1	Synthetic Polymers—Plastic	Lead	1	U

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
BB-8-2-6	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Cadmium	1	U
BB-8-2-6	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Chromium	6.27	—
BB-8-2-6	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Lead	7.04	—
BB-8-9-10	Synthetic Polymers—Plastic	Cadmium	342	—
BB-8-9-10	Synthetic Polymers—Plastic	Chromium	307	—
BB-8-9-10	Synthetic Polymers—Plastic	Lead	1480	—
BB-8-9-2	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Cadmium	1	U
BB-8-9-2	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Chromium	5.7	—
BB-8-9-2	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Lead	8.59	—
BF-2-1-1	Synthetic Polymers—Plastic	Cadmium	186	—
BF-2-1-1	Synthetic Polymers—Plastic	Chromium	1	U
BF-2-1-1	Synthetic Polymers—Plastic	Lead	1	U
BRU-1-6-2	Synthetic Polymers—Plastic	Cadmium	285	—

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
BRU-1-6-2	Synthetic Polymers—Plastic	Chromium	1	U
BRU-1-6-2	Synthetic Polymers—Plastic	Lead	1	U
BU-4-17-1	Synthetic Polymers—Plastic	Cadmium	164	—
BU-4-17-1	Synthetic Polymers—Plastic	Chromium	1	U
BU-4-17-1	Synthetic Polymers—Plastic	Lead	1	U
BU-4-22-1	Textiles (synthetic fibers and blends)	Cadmium	1	U
BU-4-22-1	Textiles (synthetic fibers and blends)	Chromium	9.5	—
BU-4-22-1	Textiles (synthetic fibers and blends)	Lead	34.8	—
BU-4-6-3	Metals (Including alloys)	Cadmium	1	U
BU-4-6-3	Metals (Including alloys)	Chromium	108	
BU-4-6-3	Metals (Including alloys)	Lead	1	U
CL-15-7-3	Metals (Including alloys)	Cadmium	1	U
CL-15-7-3	Metals (Including alloys)	Chromium	483	J
CL-15-7-3	Metals (Including alloys)	Lead	1	U
DT-16-13-1	Synthetic Polymers—Plastic	Cadmium	356	—
DT-16-13-1	Synthetic Polymers—Plastic	Chromium	1	U
DT-16-13-1	Synthetic Polymers—Plastic	Lead	1	U
DT-16-14-15	Synthetic Polymers—Plastic	Cadmium	1	U

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
DT-16-14-15	Synthetic Polymers—Plastic	Chromium	31.5	—
DT-16-14-15	Synthetic Polymers—Plastic	Lead	162	—
DT-16-2-1	Synthetic Polymers—Plastic	Cadmium	274	—
DT-16-2-1	Synthetic Polymers—Plastic	Chromium	1.57	—
DT-16-2-1	Synthetic Polymers—Plastic	Lead	1	U
DT-16-2-4	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Cadmium	1	U
DT-16-2-4	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Chromium	10.7	—
DT-16-2-4	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Lead	16.6	—
FM-25-2-1	Synthetic Polymers—Plastic	Cadmium	245	—
FM-25-2-1	Synthetic Polymers—Plastic	Chromium	1	U
FM-25-2-1	Synthetic Polymers—Plastic	Lead	1	U
MC-4-3-4	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Cadmium	1	U
MC-4-3-4	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Chromium	7.68	—

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
MC-4-3-4	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Lead	8.52	—
MCK-2-1-1	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Cadmium	1	U
MCK-2-1-1	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Chromium	1.72	—
MCK-2-1-1	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Lead	1.56	—
PC-3-5-2	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Cadmium	1	U
PC-3-5-2	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Chromium	5.17	—
PC-3-5-2	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Lead	4.69	—
PT-3-3-1	Synthetic Polymers—Plastic	Cadmium	305	—
PT-3-3-1	Synthetic Polymers—Plastic	Chromium	1	U
PT-3-3-1	Synthetic Polymers—Plastic	Lead	1	U
PT-3-5-1	Synthetic Polymers—Plastic	Cadmium	753	—
PT-3-5-1	Synthetic Polymers—Plastic	Chromium	1	U
PT-3-5-1	Synthetic Polymers—Plastic	Lead	1	U

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
PT-3-8-1	Synthetic Polymers—Plastic	Cadmium	269	—
PT-3-8-1	Synthetic Polymers—Plastic	Chromium	1	U
PT-3-8-1	Synthetic Polymers—Plastic	Lead	1	U
PT-3-9-1	Synthetic Polymers—Plastic	Cadmium	635	—
PT-3-9-1	Synthetic Polymers—Plastic	Chromium	1	U
PT-3-9-1	Synthetic Polymers—Plastic	Lead	1	U
RA-8-5-13	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Cadmium	1	U
RA-8-5-13	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Chromium	9.22	—
RA-8-5-13	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Lead	5.35	—
SEL-1-1-4	Metals (Including alloys)	Cadmium	3.33	—
SEL-1-1-4	Metals (Including alloys)	Chromium	4.03	—
SEL-1-1-4	Metals (Including alloys)	Lead	41.6	—
SEL-1-2-1	Synthetic Polymers—Plastic	Cadmium	51.2	—
SEL-1-2-1	Synthetic Polymers—Plastic	Chromium	1	U
SEL-1-2-1	Synthetic Polymers—Plastic	Lead	1	U
SF-3-4-1	Synthetic Polymers—Plastic	Cadmium	241	—

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
SF-3-4-1	Synthetic Polymers—Plastic	Chromium	1	U
SF-3-4-1	Synthetic Polymers—Plastic	Lead	340	—
WM-34-1-1	Synthetic Polymers—Plastic	Cadmium	386	—
WM-34-1-1	Synthetic Polymers—Plastic	Chromium	1	U
WM-34-1-1	Synthetic Polymers—Plastic	Lead	1	U
WM-34-14-1	Synthetic Polymers—Plastic	Cadmium	133	—
WM-34-14-1	Synthetic Polymers—Plastic	Chromium	1	U
WM-34-14-1	Synthetic Polymers—Plastic	Lead	1	U
WM-34-14-2	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Cadmium	1	U
WM-34-14-2	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Chromium	8.35	—
WM-34-14-2	Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool	Lead	1	U
WM-34-15-2	Synthetic Polymers—Plastic	Cadmium	2.83	—
WM-34-15-2	Synthetic Polymers—Plastic	Chromium	19.2	—
WM-34-15-2	Synthetic Polymers—Plastic	Lead	93.6	—

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
WM-34-19-1	Synthetic Polymers—Plastic	Cadmium	366	—
WM-34-19-1	Synthetic Polymers—Plastic	Chromium	1	U
WM-34-19-1	Synthetic Polymers—Plastic	Lead	1	U
WM-34-23-3	Synthetic Polymers—Plastic	Cadmium	409	—
WM-34-23-3	Synthetic Polymers—Plastic	Chromium	1	U
WM-34-23-3	Synthetic Polymers—Plastic	Lead	1	U
WM-34-7-2	Synthetic Polymers—Plastic	Cadmium	869	—
WM-34-7-2	Synthetic Polymers—Plastic	Chromium	1	U
WM-34-7-2	Synthetic Polymers—Plastic	Lead	1	U

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Table A4. Summary of components analyzed in the 2018-2019 study.

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
00-12-3-1*	Synthetic Polymers—Plastic	Cadmium	199	J
00-12-3-1*	Synthetic Polymers—Plastic	Chromium	1.25	J
00-12-3-1*	Synthetic Polymers—Plastic	Lead	1	UJ
00-12-4-1*	Synthetic Polymers—Plastic	Cadmium	708	J
00-12-4-1*	Synthetic Polymers—Plastic	Chromium	1.16	J
00-12-4-1*	Synthetic Polymers—Plastic	Lead	1	UJ
HF-1-1-1	Synthetic Polymers—Plastic	Cadmium	416	—
HF-1-1-1	Synthetic Polymers—Plastic	Chromium	5	U
HF-1-1-1	Synthetic Polymers—Plastic	Lead	1	U
HF-1-1-2	Synthetic Polymers—Plastic	Cadmium	9.95	—
HF-1-1-2	Synthetic Polymers—Plastic	Chromium	5	U
HF-1-1-2	Synthetic Polymers—Plastic	Lead	1380	—
HF-1-2-2	Synthetic Polymers—Plastic	Cadmium	495	—
HF-1-2-2	Synthetic Polymers—Plastic	Chromium	5	U
HF-1-2-2	Synthetic Polymers—Plastic	Lead	5.45	—

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
HF-1-3-1	Synthetic Polymers—Plastic	Cadmium	593	—
HF-1-3-1	Synthetic Polymers—Plastic	Chromium	5	U
HF-1-3-1	Synthetic Polymers—Plastic	Lead	1	U
HF-1-4-1	Synthetic Polymers—Plastic	Cadmium	422	—
HF-1-4-1	Synthetic Polymers—Plastic	Chromium	5	U
HF-1-4-1	Synthetic Polymers—Plastic	Lead	1	U
HF-1-4-2	Synthetic Polymers—Plastic	Cadmium	484	—
HF-1-4-2	Synthetic Polymers—Plastic	Chromium	9.65	—
HF-1-4-2	Synthetic Polymers—Plastic	Lead	48.6	—
HF-1-5-1	Synthetic Polymers—Plastic	Cadmium	683	—
HF-1-5-1	Synthetic Polymers—Plastic	Chromium	5	U
HF-1-5-1	Synthetic Polymers—Plastic	Lead	1	U
HF-1-6-1	Synthetic Polymers—Plastic	Cadmium	912	—
HF-1-6-1	Synthetic Polymers—Plastic	Chromium	5	U
HF-1-6-1	Synthetic Polymers—Plastic	Lead	4.27	—
HF-1-6-2	Synthetic Polymers—Plastic	Cadmium	55.5	—

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
HF-1-6-2	Synthetic Polymers—Plastic	Chromium	5	U
HF-1-6-2	Synthetic Polymers—Plastic	Lead	2010	—
HF-1-7-2	Synthetic Polymers—Plastic	Cadmium	817	—
HF-1-7-2	Synthetic Polymers—Plastic	Chromium	5	U
HF-1-7-2	Synthetic Polymers—Plastic	Lead	8.72	—
PT-4-10-1	Synthetic Polymers—Plastic	Cadmium	341	—
PT-4-10-1	Synthetic Polymers—Plastic	Chromium	5	U
PT-4-10-1	Synthetic Polymers—Plastic	Lead	1	U
PT-4-1-1	Synthetic Polymers—Plastic	Cadmium	798	—
PT-4-1-1	Synthetic Polymers—Plastic	Chromium	5	U
PT-4-1-1	Synthetic Polymers—Plastic	Lead	1	U
PT-4-3-1	Synthetic Polymers—Plastic	Cadmium	310	—
PT-4-3-1	Synthetic Polymers—Plastic	Chromium	5	U
PT-4-3-1	Synthetic Polymers—Plastic	Lead	1	U
PT-5-3-1	Synthetic Polymers—Plastic	Cadmium	409	—
PT-5-3-1	Synthetic Polymers—Plastic	Chromium	5	U

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
PT-5-3-1	Synthetic Polymers—Plastic	Lead	1	U
PT-5-4-1	Synthetic Polymers—Plastic	Cadmium	123	—
PT-5-4-1	Synthetic Polymers—Plastic	Chromium	5	U
PT-5-4-1	Synthetic Polymers—Plastic	Lead	1	U
PT-5-6-1	Synthetic Polymers—Plastic	Cadmium	628	—
PT-5-6-1	Synthetic Polymers—Plastic	Chromium	5	U
PT-5-6-1	Synthetic Polymers—Plastic	Lead	1	U
PT-5-7-1	Synthetic Polymers—Plastic	Cadmium	361	—
PT-5-7-1	Synthetic Polymers—Plastic	Chromium	5	U
PT-5-7-1	Synthetic Polymers—Plastic	Lead	1	U
SBC-3-6-1	Synthetic Polymers—Plastic	Cadmium	488	—
SBC-3-6-1	Synthetic Polymers—Plastic	Chromium	5	U
SBC-3-6-1	Synthetic Polymers—Plastic	Lead	1	U
TG-36-2-1	Synthetic Polymers—Plastic	Cadmium	50.7	—
TG-36-2-1	Synthetic Polymers—Plastic	Chromium	1	U
TG-36-2-1	Synthetic Polymers—Plastic	Lead	1	U

Component ID	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
WM-36-2-1	Synthetic Polymers—Plastic	Cadmium	417	—
WM-36-2-1	Synthetic Polymers—Plastic	Chromium	1	U
WM-36-2-1	Synthetic Polymers—Plastic	Lead	1	U

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UJ = Analyte was not detected at or above the reported estimate.

Table A5. Summary of results for components analyzed from other states.

Component ID	Study Year	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
MN-09	2014-2015	Unknown	Mercury	0.019	UJ
MN-09	2014-2015	Unknown	Lead	1	UJ
MN-09	2014-2015	Unknown	Cadmium	517	J
MN-09	2014-2015	Unknown	Chromium	1	UJ
NH-94	2014-2015	Unknown	Mercury	0.019	UJ
NH-94	2014-2015	Unknown	Lead	1	UJ
NH-94	2014-2015	Unknown	Cadmium	501	J
NH-94	2014-2015	Unknown	Chromium	1	UJ
NH-95	2014-2015	Unknown	Mercury	0.02	UJ
NH-95	2014-2015	Unknown	Lead	1.24	J
NH-95	2014-2015	Unknown	Cadmium	563	J
NH-95	2014-2015	Unknown	Chromium	1	UJ
NH-2	2014-2015	Unknown	Mercury	0.02	UJ
NH-2	2014-2015	Unknown	Lead	1	UJ
NH-2	2014-2015	Unknown	Cadmium	752	J
NH-2	2014-2015	Unknown	Chromium	1	UJ

Component ID	Study Year	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
NH-4	2014-2015	Unknown	Mercury	0.02	UJ
NH-4	2014-2015	Unknown	Lead	1	UJ
NH-4	2014-2015	Unknown	Cadmium	363	J
NH-4	2014-2015	Unknown	Chromium	1	UJ
NH-12	2014-2015	Unknown	Mercury	0.019	UJ
NH-12	2014-2015	Unknown	Lead	1	UJ
NH-12	2014-2015	Unknown	Cadmium	450	J
NH-12	2014-2015	Unknown	Chromium	1	UJ
NH-13	2014-2015	Unknown	Mercury	0.017	UJ
NH-13	2014-2015	Unknown	Lead	1	UJ
NH-13	2014-2015	Unknown	Cadmium	338	J
NH-13	2014-2015	Unknown	Chromium	1	UJ
NH-15	2014-2015	Unknown	Mercury	0.018	J
NH-15	2014-2015	Unknown	Lead	1	UJ
NH-15	2014-2015	Unknown	Cadmium	309	J
NH-15	2014-2015	Unknown	Chromium	1	UJ
NH-32	2014-2015	Unknown	Mercury	0.02	J
NH-32	2014-2015	Unknown	Lead	1	UJ
NH-32	2014-2015	Unknown	Cadmium	40.3	J
NH-32	2014-2015	Unknown	Chromium	1	UJ
NH-36	2014-2015	Unknown	Mercury	0.019	UJ
NH-36	2014-2015	Unknown	Lead	1	UJ
NH-36	2014-2015	Unknown	Cadmium	455	J
NH-36	2014-2015	Unknown	Chromium	1	UJ
NH-40	2014-2015	Unknown	Mercury	0.017	UJ
NH-40	2014-2015	Unknown	Lead	1	UJ
NH-40	2014-2015	Unknown	Cadmium	569	J

Component ID	Study Year	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
NH-40	2014-2015	Unknown	Chromium	2.3	J
IA-1	2014-2015	Unknown	Mercury	0.018	UJ
IA-1	2014-2015	Unknown	Lead	1	UJ
IA-1	2014-2015	Unknown	Cadmium	47.5	J
IA-1	2014-2015	Unknown	Chromium	1.28	J
NJ-03	2014-2015	Unknown	Mercury	0.018	UJ
NJ-03	2014-2015	Unknown	Lead	1	UJ
NJ-03	2014-2015	Unknown	Cadmium	501	J
NJ-03	2014-2015	Unknown	Chromium	1	UJ
NJ-02	2014-2015	Unknown	Mercury	0.019	J
NJ-02	2014-2015	Unknown	Lead	1	UJ
NJ-02	2014-2015	Unknown	Cadmium	239	J
NJ-02	2014-2015	Unknown	Chromium	1.14	J
NY-2018-1	2018-2019	Unknown	Lead	334	J
NY-2018-1	2018-2019	Unknown	Cadmium	1	UJ
NY-2018-1	2018-2019	Unknown	Chromium	1	UJ
NY-17-1-1	2018-2019	Unknown	Lead	1	UJ
NY-17-1-1	2018-2019	Unknown	Cadmium	65	J
NY-17-1-1	2018-2019	Unknown	Chromium	1	UJ
NY-17-2-2	2018-2019	Unknown	Lead	71.9	J
NY-17-2-2	2018-2019	Unknown	Cadmium	1	UJ
NY-17-2-2	2018-2019	Unknown	Chromium	19.9	J
NY-17-2-3	2018-2019	Unknown	Lead	73.8	J
NY-17-2-3	2018-2019	Unknown	Cadmium	1	UJ
NY-17-2-3	2018-2019	Unknown	Chromium	21.1	J
NH-2018-1-6	2018-2019	Unknown	Lead	65.4	J
NH-2018-1-6	2018-2019	Unknown	Cadmium	1	UJ

Component ID	Study Year	Component Material	Analyte Name	Analysis Value (ppm)	Qualifier
NH-2018-1-6	2018-2019	Unknown	Chromium	12.1	J
NH-2018-1-8	2018-2019	Unknown	Lead	58.4	J
NH-2018-1-8	2018-2019	Unknown	Cadmium	1	UJ
NH-2018-1-8	2018-2019	Unknown	Chromium	12.9	J
NH-2081-3-1	2018-2019	Unknown	Lead	1	UJ
NH-2081-3-1	2018-2019	Unknown	Cadmium	210	J
NH-2081-3-1	2018-2019	Unknown	Chromium	1	UJ
RI-2018-1-1	2018-2019	Unknown	Lead	1.68	J
RI-2018-1-1	2018-2019	Unknown	Cadmium	470	J
RI-2018-1-1	2018-2019	Unknown	Chromium	1	UJ
RI-2018-2-8	2018-2019	Unknown	Lead	106	J
RI-2018-2-8	2018-2019	Unknown	Cadmium	34.4	J
RI-2018-2-8	2018-2019	Unknown	Chromium	10.7	J
RI-2018-2-10	2018-2019	Unknown	Lead	131	J
RI-2018-2-10	2018-2019	Unknown	Cadmium	45.6	J
RI-2018-2-10	2018-2019	Unknown	Chromium	13.3	J
MN-2018-5-1	2018-2019	Unknown	Lead	1	UJ
MN-2018-5-1	2018-2019	Unknown	Cadmium	1,020	J
MN-2018-5-1	2018-2019	Unknown	Chromium	1	UJ
MN-2018-14-1	2018-2019	Unknown	Lead	1	UJ
MN-2018-14-1	2018-2019	Unknown	Cadmium	87.9	J
MN-2018-14-1	2018-2019	Unknown	Chromium	1	UJ

Note. Laboratory report available upon request. Data were rejected for inclusion in the database due to unknown purchase history.

J = Analyte was positively identified. The reported result is an estimate.

U = Analyte was not detected at or above the reported result.

UJ = Analyte was not detected at or above the reported estimate.